

Complementary feeding practices and their determinants among children 6–23 months of age in an outpatient hospital setting in Central India: A cross-sectional study

Shikha Jain¹, Bhavna D. Bhan², Girish C. Bhatt²

¹Department of Pediatrics, All India Institute of Medical Sciences, Nagpur, Maharashtra, ²Department of Pediatrics, All India Institute of Medical Sciences, Bhopal, Madhya Pradesh, India

ABSTRACT

Objective: To study and profile complementary feeding practices and their determinants among children 6–23 months of age in an outpatient hospital setting in Central India: A cross-sectional study. **Method:** Total 464 Children, 6–23 months of age, visiting Well baby clinic and Immunization center at AIIMS Bhopal during February 2015 to June 2016, where parents had given consent for participation in the study were included. Children with congenital malformations affecting feeding, cerebral palsy, known chronic systemic diseases, were excluded. **Result:** Breastfeeding was initiated within 1 hour in 59.5%. Complementary feeds were given in 84% of children 6–8 month of age. Minimal dietary diversity as determined by WHO was received by 57% of children while minimal meal frequency was present in 86%. Minimal acceptable diet was received by 58% of children. Breastfeeding was continued in 86% children at 1 year of age and 41% children at 2 years of age. Bottle feeding was present in 26% of children. Multivariate regression analysis was done to correlate minimum acceptable diet and various variables affecting the feeding habits. Higher maternal education (adjusted OR: 4.03; 95% CI: 2.35–6.89) and income group (adjusted OR: 2.03; 95% CI: 1.11–3.72) were found to be significant. Joint families had better feeding practices when compared to nuclear families (adjusted OR: 1.72; 95% CI: 1.12–2.64). Homemaker mothers were able to feed their children in more appropriate way (adjusted OR: 3.33; 95% CI: 1.17–6.62). **Conclusion:** Well-educated homemaker mother, higher income group, and joint families help in establishing better complementary feeding habits in children less than 2 years. An understanding of the prevalent practices will be helpful in identification of areas that need to be focused upon and reemphasized during counseling the caregivers of the young children to improve their nutritional status, which will also reduce the burden of disease at primary care.

Keywords: Breastfeeding, complementary feeding, IYCF indicators

Introduction

Adequate nutrition during infancy and early childhood is fundamental to each child's growth and development. The period from birth to two years of age is critical for the promotion of optimal growth, health, and behavioral development^[1] as during this period, child moves from

mother's milk to solid foods as his primary source of nutrition.^[2] According to National Family Health Survey 4 (NFHS), only 9.6% of children aged 6–23 months received adequate diet.^[3] NFHS 4 also suggests that about 38.4% children under 5 years of age are stunted and 35.8 percent are underweight,^[3] the suboptimal infant and young child feeding practices are a major contributor to this burden. The World Health Organization (WHO) has developed infant and young child feeding (IYCF) indicators to monitor and to guide the feeding practices of young children.^[4]

Address for correspondence: Dr. Shikha Jain,

Department of Pediatrics, All India Institute of Medical Sciences, Nagpur, Maharashtra, India.
E-mail: shikha.5dec@gmail.com

Received: 31-10-2019

Revised: 31-01-2020

Accepted: 03-02-2020

Published: 28-02-2020

Access this article online

Quick Response Code:



Website:
www.jfmipc.com

DOI:
10.4103/jfmipc.jfmipc_958_19

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Jain S, Bhan BD, Bhatt GC. Complementary feeding practices and their determinants among children 6–23 months of age in an outpatient hospital setting in Central India: A cross-sectional study. *J Family Med Prim Care* 2020;9:1187-90.

This study was planned to profile the complementary feeding practices of children 6-23 months of age to obtain information about the above indicators and the determinants affecting complementary feeding practices were also studied.

Materials and Methods

Institutional Human Ethics committee, All India Institute of Medical Sciences, Bhopal approval was obtained. Date of approval: 30th January 2015. This was a cross-sectional study conducted in children 6–23 months of age, visiting Well baby clinic and Immunization center at AIIMS Bhopal during February 2015 to June 2016. Sample size of 464 with confidence interval of 95% was calculated based on the current prevalence of practice of introduction of solid, semi-solid and soft food (55% at 6–8 months) as per NFHS-3 report.

All children aged 6 month to 23 months, where parents had given consent for participation in the study were included. Children with congenital malformations affecting feeding, e.g. cleft palate and cleft lip, cerebral palsy, known chronic systemic diseases, sick children requiring admission or immediate care, children not accompanied by parents or reliable caregivers were excluded.

Data was collected by interviewing the parents/caretakers on pre-designed, semi-structured questionnaire. Socio-demographic data was recorded. Previous day 24-hour recall method was used to collect information on diet.

Data collection process was done on electronic tablet so as to facilitate real-time and accurate data entry. Statistical analysis was done using IBM-SPSS version 16 Software. Correlation of various determinants with minimum acceptable diet was done using multivariate logistic regression analysis.

Results

Out of 464 children included in study, 54% were male while 46% were female. 65% of the children included were firstborn while 3% were third born or above. 53% of the children came from nuclear families. 83% families had monthly income of >Rs. 10,000. 83% children had father with education of graduation or above who were either self-employed or were professionally occupied. 73% mothers were graduate or above. 73% mothers were in the age group of 20-29 years while 25% belonged to age group of 30-35 years. 91 percent mothers were housewives. 98% of mothers had 4 or more antenatal clinic visits during their last pregnancy, and 98% had hospital deliveries. 99% families had access to media in form of newspaper or radio or television. 68% of the families had at least a two-wheeler for commute.

Breastfeeding was initiated within 1 hour of birth in 59.5%. Breastfeeding was at least tried at any time in 99% of children. 26% children were bottle-fed. IYCF indicators of the study are given in Table 1.

Table 1: Proportions determining Infant and Young Child feeding indicators

Indicator	Proportion (%)
Introduction of complementary feeding (n=77)	84
Minimal dietary diversity (n=464)	57
Minimal meal frequency (n=464)	86
Minimal acceptable diet (n=464)	58
Continued breastfeeding at 1 year, Age 12-15 month (n=58)	86
Continued breastfeeding at 2 years, Age 20-23 month (n=81)	41
Milk feeding frequency in non-breastfed (n=97)	73

Table 2: Multivariate logistic regression analysis for minimum acceptable diet

	p	Adjusted OR	95.0% CI for adjusted OR	
			Lower	Upper
Maternal age	0.439	0.81	0.48	1.37
20-29 years				
Teenage/>30 years (referent)				
Maternal education	<0.001	4.03	2.35	6.89
Graduate and above				
Illiterate to 12 th (referent)				
Income	0.021	2.03	1.11	3.72
>10,000/month				
<10,000/month (referent)				
Birth order	0.293	1.29	0.80	2.08
Second or above born				
First born (referent)				
Birth interval	0.893	1.05	0.49	2.23
>24 months				
<24 months (referent)				
Gender	0.115	0.72	0.47	1.08
Male				
Female (referent)				
Family type	0.012	1.72	1.13	2.64
Joint family				
Nuclear family (referent)				
Maternal occupation	0.001	3.33	1.67	6.62
House wife				
Working (referent)				

Multivariate regression analysis was done to correlate minimum acceptable diet and various variables affecting the feeding habits [Table 2].

Discussion

According to the NFHS-4,^[3] the percentage of children under 3 years of age who are breastfed within 1 hour of birth in urban Madhya Pradesh are 31.6%; whereas in this study this was better at 59.5% in children 6-23 month of age. The Country profiles released by WHO show that 22% of children 0-23 month of age received breastfeed within 1 hour in India. The source of WHO statistics is Demographic and Health Surveys (DHS) 2005-2006 and World Health Statistics (WHS) 2010.^[5] The main reasons for not initiating early breastfeeding in the study

were found to be caesarean section deliveries and intensive care unit admissions for neonates. In the present study, 98% hospital deliveries might be helpful in initiating breastfeeding within 1 hour in normal uncomplicated deliveries. Similar study done in another developing country, Malawi also showed that mothers who had a cesarean delivery were less likely to initiate breastfeeding immediately after birth.^[6] Secondary data analysis of NFHS-3 also shows that rates of timely initiation of breastfeeding were higher among women who were better educated, made more antenatal clinic visits, and were exposed to the radio while it was lower in women with cesarean deliveries.^[7] In the present study, 86% of children were breastfed at 1 year of age (12-15 month) while breastfeeding dropped down to 41% at 2 years of age (20-23 month). According to WHO, 89% children were breastfed at 1 year of age while it dropped down to 73% at 2 years of age in India. The possible reason for decreased breastfeeding in second year in present population as compared to WHO data might be less requirement of breastfeeding during second year due to better complementary feeding practices.

A total of 26% babies were bottle fed in this study while its 14% for India as per WHO. It is similar to 26.5% in Delhi study.^[8] 99% of the children were ever breastfed in the present study which is similar to 97% according to WHO.

Introduction of complementary feeding, i.e. children aged 6-8 months receiving solid or semi-solid food is better at 84% than 45.3% in urban Madhya Pradesh, while its 55% for India as per WHO. The possible reasons for the differences noted could be better maternal education and availability of media (in form of radio/television/newspaper) to 99% of caregivers in the catchment area of AIIMS Bhopal. Similar study conducted at an Urban Health Centre in Delhi in 2012 had 72.7% children aged between 6 and 9 months receiving complementary feeding. Secondary analysis of NFHS-3 also concluded that the rate of timely initiation of complementary feeding was higher for mothers who had more antenatal visits, and for those who watched television. In another study conducted at Agra district, timely initiation of complementary feeding was significantly associated with the literacy status of the mothers.^[9] In the present study 83% of mothers were literate up to 12th standard or above.

Minimum dietary diversity (MDD) is 57% in the present study while it is 12% in India as per WHO. MDD was observed in 32.6% of the children in Delhi study. MDD is proportion of children 6–23 months of age who receive foods from 4 or more out of 7 food groups. The 7 foods groups used for tabulation of this indicator are: (a) grains, roots and tubers (b) legumes and nuts (c) dairy products (milk, yogurt, cheese) (d) flesh foods (meat, fish, poultry and liver/organ meats) (e) eggs (f) vitamin-A rich fruits and vegetables (g) other fruits and vegetables. Minimum meal frequency (MMF) is 86% in this study while it was 44% in Country Profile for WHO. This shows that although higher proportions of children are fed the minimum number of times, they are not fed the right diversity of food.

Increasing awareness among the families is the key in promoting balanced diet in children. Another drawback that seems to be evident is that two major food groups were comprised of non-vegetarian food. More research should be done for better definition of food groups, keeping Indian population in mind. This might help in reduction of bias.

Minimum acceptable diet is 58% in this study while it is 7% for India and 8.2% according to NFHS 4 factsheet for urban Madhya Pradesh. Multivariate regression analysis was done to correlate minimum acceptable diet and various variables affecting the feeding habits [Table 2]. Higher maternal education (adjusted OR: 4.03; 95% CI: 2.35–6.89) and income group (adjusted OR: 2.03; 95% CI: 1.11–3.72) were found to be significant. Joint families had better feeding practices when compared to nuclear families (adjusted OR: 1.72; 95% CI: 1.12–2.64). Homemaker mothers were able to feed their children in more appropriate way (adjusted OR: 3.33; 95% CI: 1.17–6.62). Educated housewife mothers are able to feed their children in more appropriate way. Amendments should be done in law so that working mothers can also give more time to their children up to 2 years of age, without compromising their career. Educated, well to do joint families provide better health care during pregnancy and support mothers in establishment of healthy feeding in children. Social and behavior change communication interventions had significant impact on infant and young child feeding practices in Bangladesh, Ethiopia and other countries.^[10,11] Policy content and stakeholder network analysis for infant and young child feeding in India by Puri *et al.* concluded that there is integration of IYCF policies into a range of agendas and guidelines related to health and child development services; however, there is lack of a specific national policy on IYCF.^[12] Targeted policies with behavior change strategies will help in better feeding practices in India.

The strength of the study was direct interview of caregivers by the investigator reducing the response bias. An understanding of the prevalent practices will be helpful in identification of areas that need to be focused upon and reemphasized during counseling the caregivers of the young children to improve their nutritional status. The frontline field workers and health personnel can be sensitized to address the gap areas. However, bias in sample selection due to catchment area of the hospital is limitation of the study.

In conclusion well-educated homemaker mother, higher income group and joint families help in establishing better complementary feeding habits in children less than 2 years. Maternal education and grandparents in families help in better feeding practices thereby reducing malnutrition which is a major health burden at primary care in India. The IYCF practices are far from satisfactory and greater emphasis is required to be placed on the need for dietary diversity, minimum acceptable diet and minimum meal frequency along with strengthening of breastfeeding practices.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. PAHO/WHO. Guiding principles for complementary feeding of the breastfed child. Washington DC/Geneva, Switzerland: PAHO/WHO; 2003.
2. Khanal V, Sauer K, Zhao Y. Determinants of complementary feeding practices among Nepalese children aged 6-23 months: Findings from demographic and health survey 2011. *BMC Pediatr* 2013;13:131.
3. International Institute for Population Science, Mumbai for Government of India. State factsheet, Madhya Pradesh. National Family and Health Survey-4(NFHS-4); 2015-16.
4. World Health Organization: Indicators for assessing infant and young child feeding practices Part 1 Definitions. Washington DC [USA]: World Health Organization. Dept. of Child and Adolescent Health and Development; 2007.
5. WHO/UNICEF/IFPRI/UCDavis/FANTA/AED/USAID. Indicators for assessing infant and young child feeding practices. Part 3: Country profiles. Geneva: World Health Organization; 2010.
6. Walters CN, Rakotomanana H, Komakech JJ, Stoecker BJ. Maternal determinants of optimal breastfeeding and complementary feeding and their association with child undernutrition in Malawi (2015-2016). *BMC Public Health* 2019;19:1503.
7. Patel A, Badhoniya N, Khadse S, Senarath U, Agho KE, Dibley MJ. Infant and young child feeding indicators and determinants of poor feeding practices in India: Secondary data analysis of National Family Health Survey 2005-06. *Food Nutr Bull* 2010;31:314-33.
8. Khan AM, Kayina P, Agrawal P, Gupta A, Kannan AT. A study on infant and young child feeding practices among mothers attending an urban health center in East Delhi. *Indian J Public Health* 2012;56:301-4.
9. Chauhan M, Bala R, Nandan D, Misra SK. Complementary feeding practices in rural area of district Agra. *Indian J Public Health* 2007;51:66-7.
10. Sanghvi T, Haque R, Roy S, Afsana K, Seidel R, Islam S, *et al.* Achieving behaviour change at scale: Alive and Thrive's infant and young child feeding programme in Bangladesh. *Matern Child Nutr* 2016;12(Suppl 1):141-54.
11. Kim SS, Rawat R, Mwangi EM, Tesfaye R, Abede Y, Baker J, *et al.* Exposure to large-scale social and behaviour change communication interventions is associated with improvements in infant and young child feeding practices in Ethiopia. *PLoS One* 2016;11.
12. Puri S, Fernandez S, Puranik A, Anand D, Gaidhane A, Quazi Syed Z. Policy content and stakeholder network analysis for infant and young child feeding in India. *BMC Public Health* 2017;17(Suppl 2):461.